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THE TREATMENT OF LEPTOMENINGITIS

REPORT OF FIFTY CASES TREATED AT A WITWATERSRAND MINE HOSPITAL

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All the cases considered in this series occurred among adult Bantu males between the ages of 18 and 34 years. Being employees of the mine, they were expected to be capable of strenuous work and were of necessity drawn from this age group. Only three of the cases were natives of the Union of South Africa, the others being men recruited from tropical areas.

The average length of time these men had been employed in the mine was six days, and, as the incubation period of meningococcal meningitis is usually about seven days (or less), it is suggested that they were infected either during the train journey from the recruiting depots or during the first few days of communal compound life. No racial susceptibility was noted, nor was any special occupation found to be a predisposing cause. (It should be stated here that it is a rule on the Witwatersrand Gold Mines that all tropical employees must undergo a period of twenty-eight days acclimatization, doing light surface work, before being allowed underground.) The relative paucity of cases among Union natives (of whom there were three cases as compared to 47 cases from tropical areas) though Union natives outnumber tropical natives by three to one, may be explained by the shortness of the train journey from the Union tribal reserves to the Witwatersrand as compared with that from Nyasaland, Angola, etc. Union natives have shorter time of contact with carriers.

Another possible explanation is that Union natives are more accustomed to congested conditions and have developed a relative immunity to the infection, which the Tropical native from less thickly-populated areas has not.

Cases were most numerous during May to August (the winter in South Africa), when upper respiratory tract infection is prevalent on the Witwatersrand.

Only when purulent cerebrospinal fluid was obtained by lumbar puncture was the diagnosis of meningitis accepted.

Clinically, the syndrome of headache, combined with inability to 'chin' the sternum, was found to be most significant. Early diagnosis in this disease is extremely important; the wisdom of being 'stiff-neck conscious' whenever confronted by a case of pyrexia accompanied by headache cannot be gainsaid. (Every hospital admission should be tested for neck-rigidity as a routine. If the patient is examined standing, an involuntary genu-flexion is produced when an attempt is made to flex the neck). Kernig's sign was found to be inconstant, but nearly all cases demonstrated Brudzinsky's sign.

Although always carefully sought, in no instance were petechiae found. Herpetic eruptions were common and were accepted as a favourable sign that the patient was recovering by the time they appeared. In only one case, when the patient developed severe conjunctival herpes, was the rash troublesome.

Many patients developed stubborn urinary retention and had to be catheterized repeatedly throughout the acute stage of the illness.

Temperature and pulse were found to be very variable. In all but the extremely ill (who were hyperpyrexial and had rapid, weak pulses), a minimal departure from the normal was noted, even when by lumbar puncture a grossly purulent fluid was obtained.

LABORATORY FINDINGS

Ordman [1] records that, between 1919 and 1931, of all the specimens of cerebrospinal fluid submitted for bacteriological examination to the South African Institute for Medical Research, Johannesburg, only 40% showed the presence of pathogenic organisms. Of these 74% were meningococci, 19% pneumococci, and the remaining 7% miscellaneous organisms with streptococci predominating.

In the 50 cases comprising this report, microscopic examination of the fluid was first done in the ward by myself and then sent to the above Institute for confirmation. In 18 cases were meningococci found; pneumococci in six; and 'pus cells only' in 26.

It may be postulated that those cases reported as 'pus cells only' were in fact due to meningococcal infection as they responded very well to the sulphonamides administered; proven pneumococcal cases responded less readily. Lumbar puncture was performed in each case without anaesthesia and only sufficient fluid was withdrawn for bacteriological examination. (No pressures were recorded nor were any chemical analyses undertaken).

At first Gram's method of staining was used to

demonstrate the causal organism in the ward, but later it was noted that methylene blue alone, applied for about twenty seconds, showed up the organism more satisfactorily.

With a little experience one may differentiate between meningococci and pneumococci in the majority of cases. (This statement was confirmed by the reports from the Institute). Meningococci may usually be demonstrated intracellularly even in acute fulminating cases, but pneumococci are never intracellular.

MORTALITY RATE

Before the advent of the sulphonamides Ordman [1] reported that among the natives on the Witwatersrand mines, the mortality rate of cerebrospinal fever was over 50% and that pneumococcal meningitis was invariably fatal. But with the administration of this drug the case mortality (if one excludes those fulminating cases who die before anything can be done for them), has dropped to as low as 2% in meningococcal meningitis (Tidy [2]) and to about 30% in the pneumococcal form.

In this series of 50 cases seen over a six-month period from January to July 1948, there were only two deaths. One was a fulminating case who died shortly after admission and in whom scanty intra- and extracellular diplococci in a cerebrospinal fluid smear were demonstrated, and the other was a proved case of meningococcal meningitis who died in status epilepticus on his fourth day in hospital.

Of six cases of pneumococcal meningitis, all recovered.

Meningococcal Meningitis: Forty-four cases were seen. Starting as a bacteraemia, there is usually a four to five day prodromal period before signs of meningitis appear. In the Bantu it is usually impossible to get such a history as they accept illness only when they are prostrated.

(a) *Mild form*: Thirty-four cases were admitted conscious, with headache as the sole complaint. In the majority the temperatures were only slightly above normal, but in all neck-rigidity was found. On lumbar puncture each showed purulent fluid, apparently under pressure. One of the men had a complicating apical lobar pneumonia, but on culture the organisms in his cerebrospinal fluid were proved to be meningococci.

In only 14 of these cases were meningococci demonstrated. All the patients recovered.

(b) *Fulminating form*: Nine cases were admitted in coma; they were restless and incontinent of both urine and faeces. One died soon after admission.

In five, intra- and extracellular diplococci were demonstrated in the cerebrospinal fluid. The coma is due to a diffuse meningococcal encephalitis and death follows from an intense toxaemia.

In the fatal case all that was seen at autopsy was a gross cerebral oedema. There were no signs of adrenal haemorrhage.

(c) *Epileptiform Variety*: This type is due to an acute focal encephalitis, and one such case was seen. He was admitted in coma, and became mentally clear on treatment, but on the fourth day developed a series of epileptic attacks and succumbed. At autopsy minute petechiae were noted throughout the brain substance.

TREATMENT

1. *Meningococcal Meningitis*: The specific treatment is with the sulphonamides, and, as they are effective against all types of meningococci, grouping of the organism is no longer considered necessary.

Sulphapyridine was the only sulphonamide used in this series, for both the meningococcal and pneumococcal cases, in tablet form in those who could swallow, otherwise intravenously. The average total dose was 26 gm. given as 4 gm. initially, and by steps down to 1 gm. every two hours, and then 1 gm. four-hourly. Relapse occurred in two cases only, and they were then treated with Sulphadiazine (up to 12 gm. given in 24 hours). Although the latter drug is reputed to be the sulphonamide of choice in all forms of meningitis,[2] the successful results obtained in the earlier cases of this series justified, in my opinion, perserverance with Sulphapyridine.

Only one patient developed a haematuria, after receiving 16 gm. in the first 24 hours; it cleared up on stopping the drug. It was noted that when the sulphonamides were given any complaint of abdominal pain was warning of impending urinary complications.

There were no other complications of this form of treatment. Penicillin was not used in the treatment of meningococcal cases.

2. *Pneumococcal meningitis* can only be diagnosed by demonstrating the specific pneumococcus in the cerebrospinal fluid. There is no way of differentiating it by clinical means from meningococcal meningitis.

Six cases were seen and all recovered without sequelae.

As soon as the true diagnosis was established the patient was again lumbar punctured, and not more than 10,000 units penicillin well diluted in normal saline was injected intrathecally. As a rule only one such injection was given in each case. In addition, 300,000 units of penicillin was given intramuscularly daily for five days, as well as the 26 gm. of Sulphapyridine given to all the cases.

These six patients were admitted in coma, and only one failed to become lucid within 24 hours. He remained semi-conscious for seven days and received intrathecal penicillin daily. It was necessary to resort to tube-feeding. On the second day a marked left hemiparesis was noted, but this passed off completely during his convalescence He was discharged cured after 38 days, but was too debilitated to work in the mine; he was therefore repatriated to his home.

No relapses occurred in this group.

Maynard [3] reported that in 688 autopsies performed on mine natives from the tropics dying from pneumonia in Johannesburg in 1913, 10.5% of them showed the presence of a leptomeningitis. It is noteworthy that during the period comprising this report we were much troubled by the numbers of hospital admissions of tropical Bantu with pneumonia, and it is noted that of the pneumococcal meningitis cases five were from this group of susceptible tropical Natives.

COMMENTS

The average hospitalization per case was only 12 days, and weight loss per case three pounds.

All patients (but for the one repatriated) were discharged

to one month's light surface work, and thence to their normal duties. We could find no evidence of any cross-infection between cases discharged from hospital and new admissions. Carriers were not searched for, as we considered all cases to have arrived at the mine during the prodromal period of the disease.

As meningococcal meningitis has a low infectivity, and immunity is readily developed, it was considered perfectly safe to treat a case in the general medical wards.

The mortality rate in the 44 cases of meningococcal meningitis was only 4.5% (including the fulminating case which died).

Recovery occurred in all six cases of pneumococcal meningitis.

SUMMARY

The treatment of 44 cases of meningococcal meningitis and 6 cases of pneumococcal meningitis is discussed.

Reasons for the high incidence of leptomeningitis among Tropical mine natives are suggested.

The clinical picture of meningococcal meningitis as seen in 44 cases is reviewed.

My thanks are due to Dr. N. R. A. MacColl, Randfontein Estates Gold Mining Company, for permission to publish this paper, and to Dr. G. H. Robertson (South African Institute for Medical Research, Johannesburg) and Dr. E. R. D. Eastman-Nagle (Public Health Department, Springs) for the interest taken in its composition.

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ABSTRACTS

G. V. Anrep, M. R. Kenaway and G. S. Barsoum, *Coronary Vasodilator Action of Khellin* (Visamin). American Heart Journal (1949): **37**, p. 481.

Anrep and his associates compare the action of visamin (khellin, dimethoxymethyl-furano chromome) with aminophylline on the coronary circulation and on smooth muscle of guinea pigs, on the heart-lung preparation and on the isolated rabbit heart. Khellin was clinically tried in 300 patients with coronary artery disease. The experimental observations show that khellin is a potent coronary vasodilator. Khellin has a prolonged action and remains in the circulation for many hours. Its action in dilating the coronary arteries was found to be at least four times stronger than that of aminophylline. Khellin can be used continuously in the treatment of angina pectoris and also for the relief of individual attacks of pain. It can be administered orally in doses of 50 to 100 mg. three times per day or as intramuscular injection in doses of 100 to 200 mg. The drug produces a few side effects but is not toxic even after prolonged administration. It does not change the bleeding or coagulation time. Of 250 patients with angina pectoris treated with khellin, distinct improvement was noted in 140, moderate improvement in 85 and no effect in 25. The drug was given to 50 patients with recent coronary thrombosis to improve the collateral circulation and relieve associated anginal symptoms.

The latter, at least, seemed to have been accomplished.

V. J. Collins, *Use of Intravenous Quinidine during Clinical Anesthesia for Treatment of Acute Arrhythmias.* New York State Journal of Medicine (1949): **49**, pp. 1554-1556.

Collins points out that quinidine preparations have been found effective clinically in treating disorders of cardiac rhythm occurring during anaesthesia especially with cyclopropane. A highly soluble salt, quinidine lactate, has been tested and found to possess the same activity as the sulphate salt.

Originally, it appeared from clinical observation that quinidine administered intravenously was effective in about 10 to 12 minutes. However, examination of the electrocardiographic tracings reveals that many rhythms are reverted to normal in four to six minutes. Frequently a tachycardia, similar to the paradoxic tachycardia following the slowing of an auricular fibrillation, develops and lasts for one to three minutes.

No untoward cardiovascular reactions have been noted at the time of administration, and in fact there has been improvement with elevation of the systolic blood pressure. Neither has respiratory depression or bronchospasm been seen in the cases treated. No instances of idiosyncrasy have been detected in a careful post-operative follow-up. The use of quinidine, particularly its intravenous administration, has been avoided by many physicians because of its reputed marked toxicity. Much of this feeling has apparently developed on theoretic grounds, especially in relation to patients with chronic auricular fibrillation.

The most feared reaction is that of embolism. For this to happen auricular fibrillation must have existed for some time in order that a thrombus form. Stroud and Laplace state that the incidence of embolic phenomenon in chronic auricular fibrillation is no greater with quinidine than with digitalis. Marvin reports that embolic episodes are definitely less when quinidine is used than when no drug is administered. Likewise the report by McMillan in which patients with chronic auricular fibrillation were treated with quinidine shows that serious side reactions to quinidine are few.

In other words, it appears that toxic reactions to quinidine have actually been overrated and a useful drug has been neglected. Furthermore, the arrhythmias developing during anaesthesia are acute, and hence thrombus formation is minimal or unlikely. The precipitation of ventricular fibrillation by quinidine is a possible hazard. However, quinidine is actually indicated for breaking the mechanism of paroxysmal ventricular fibrillation.

S. A. Frankel and O. Graessle, *The in vivo Activity of Neomycin.* J. Bacteriology (1949): **58**, pp. 229-239.

Crude preparations of neomycin in concentrations of 2,000 to 5,000 units when injected subcutaneously into mice were well tolerated by these experimental animals. These concentrations are at least 20 to 50 times the protective concentration of this antibiotic.

Neomycin was more effective than streptomycin in suppressing infection of mice with *Staphylococcus aureus*. It was as effective upon the streptomycin-resistant strains of this organism as upon the sensitive strains.

Neomycin was more effective than streptomycin by oral administration. It was also effective in suppressing infection of mice and chick embryos by different *Salmonella* strains. It proved to be highly effective, far more than streptomycin, upon *Eberthella typhosa* in mice.

It is not known as yet how many fractions make up the neomycin complex and whether the various fractions will show different effects upon different bacteria as was shown to be the case for penicillin and streptomycin.

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EDITORIAL

THE CANCELLATION OF THE JOINT MEETING—1951

Our readers will by now be aware of the distressing situation resulting from the cancellation of the Joint Meeting arranged between the British Medical Association and our own Medical Association this year.

As soon as the possibility of certain passport difficulties was appreciated, the Association tried to make certain that none of our colleagues who might accept the invitation to join us in a scientific gathering, would be exposed to the risk of any inconvenience. The Minister of the Interior was advised that application for entry into the Union from members of the British Medical Association might come from colleagues of various races, colours and creeds. He was asked to give an assurance that these facts in themselves would not debar our overseas colleagues from entry into the Union for the purpose of a purely scientific gathering.

It will generally be agreed that it would be unreasonable for any Minister of any Government to give an unqualified permission in advance for the entry of non-Union nationals into the Union. It was, however, reasonable to anticipate that the Minister might have couched his reply in such a way as to re-assure officials of the British Medical Association and ourselves that no application would be refused on the mere ground of race or colour or creed; nor, we feel sure, would the British Medical Association or ourselves have disagreed with the Minister if he had qualified an assurance with the reservation that in individual cases, political but not racial considerations might necessitate the with-holding of the necessary permission. It is well known that in many parts of the world citizens have had their freedom of travel curtailed but the reasons have always been ideological.

The Minister's decision, of course, is a political one. In our view every attempt should have been made to eliminate purely political factors in the consideration of a request based on the need to organize a purely scientific function devoid of all partisan political principles.

Our distress is the greater in view of the virtual cultural and scientific isolation which has now been imposed upon us, through no choice of our own, at a time when the interdependence of nations for the common scientific good has never been greater and more necessary.

VAN DIE REDAKSIE

DIE KANSELLERING VAN DIE GESAMENTLIKE VERGADERING—1951

Ons lesers sal teen hierdie tyd bewus wees van die onrusbarende toestand wat ontstaan het as gevolg van die kansellering van die Gesamentlike Vergadering wat vir hierdie jaar deur die *British Medical Association* en ons eie Mediese Vereniging gereël is.

Sodra daar besef is dat die moontlikheid van seker moeilikhede met paspoorte bestaan, het die Vereniging probeer verseker dat geen kollega van ons wat die uitnodiging aanneem om aan 'n wetenskaplike byeenkoms deel te neem, aan die moontlikheid van enige ongerief blootgestel sou word nie. Die Minister van Binnelandse Sake is in kennis gestel dat aansoeke van lede van die *British Medical Association* om die Unie binne te kom, van kollegas van verskillende ras, kleur en geloof afkomstig kon wees. Hy is gevra om 'n versekering te gee dat nie bloot hierdie omstandighede sou verhoed dat ons buitelandse kollegas die Unie vir die doel van 'n suiwer wetenskaplike byeenkoms binnekom nie.

Daar sal algemeen saamgestem word dat dit onredelik sou wees dat 'n Minister van enige Regering vooruit onbeperkte toestemming gee dat persone wat nie Unieburgers is nie die Unie binnekom. Dit was egter redelik om te verwag dat die Minister sy antwoord so sou bewoord het dat dit amptenare van die *British Medical Association* en vir ons sou gerusstel dat geen aansoek bloot op grond van ras of kleur of geloof van die hand gewys sou word nie; daarbenewens voel ons seker dat ons en die *British Medical Association* nie van die Minister sou verskil het indien hy 'n versekering gekwalifiseer het deur die voorbehoud dat in afsonderlike gevalle, politieke maar nie rasse-oorwegings nie dit nodig kon maak om die nodige toestemming te weier. Dit is algemeen bekend dat in baie dele van die wêreld burgers se vryheid om te reis aan bande gelê is, maar die redes daarvoor was altyd van ideologiese aard.

Die Minister se besluit is natuurlik 'n politieke. Na ons mening moes alle pogings aangewend gewees het om suiwer politieke faktore uit te skakel by die oorweging van 'n versoek wat gegrond is op die behoefte om 'n suiwer wetenskaplike funksie te organiseer wat ontbloot is van alle partypolitieke beginsels.

Met die oog op feitlik die isolasie wat ons nou, sonder dat ons dit begeer het, op kulturele en wetenskaplike gebied opgelê is op 'n tydstip wanneer die wedersydse afhanklikheid van nasies vir die gemeenskaplike welsyn

The Minister's decision may also have consequences much more far-reaching and distressing than he may have contemplated because any international conference, even if it is innocuously devoted to purely scientific matters, now becomes virtually impossible if it is to be convened in South Africa.

The British Medical Association is an Association affiliated to our own Association and we fully understand the principles which motivated our colleagues in their decision to cancel the Joint Meeting for this year. We deplore the occasion which required them to do so and which falls so far short of our heretofore proud traditions of South African hospitality.

SOUTH AFRICAN COLLEGES OF PHYSICIANS AND SURGEONS?

The steadily developing desire throughout the country for the establishment of South African Colleges of Physicians and Surgeons reflects the growing interest of the medical profession in the problems of post-graduate medical education.

An important step in connexion with these problems was taken on 13 December 1949 when, under the sponsorship of the South African Medical and Dental Council, interested bodies (including the representatives of the Medical Association of South Africa) were invited to a *Conference on Post-Graduate Medical and Dental Education, Examination and Registration in the Union.* This Conference was only exploratory, but the work of the participating bodies was very successful and encouraging, with the result that a second Conference has been convened for 10 May 1951. It is, indeed, gratifying to report such marked progress in so short a time.

Although the Conference will be concerned with post-graduate medical problems in general, it is quite clear that one of the important projects which may crystallize from these discussions is a South African College or Colleges of Physicians and Surgeons.

In this matter our own Association has a primary and enduring interest for it has approved of the establishment of such a College in principle and has gone so far as to make provision for financial assistance in the early stages of the College. Indeed, at its recent meeting, Federal Council even set up a special committee to concern itself with the practical details of the projected College. It is to be hoped that at its next meeting the personnel of this committee will be appointed because a very considerable amount of investigation and planning still remains to be done.

It would be premature, e.g. at this stage to decide whether the Colleges of Physicians and Surgeons should be separate or combined. It is certain, however, that the prognosis for this venture is most excellent as it is being dealt with at the highest levels by all those who have a genuine interest and concern in the matter. A South African College could hardly be brought into being under better auspices than those which govern its development at present.

nog nooit groter of nodiger was nie, is ons besorgdheid des te groter.

Die Minister se besluit mag ook verreikender en ernstiger gevolge hê as wat hy beoog het, want enige internasionale konferensie, selfs al is dit ewe onskadelik aan rein wetenskaplike sake gewy, word nou feitlik onmoontlik indien dit in Suid-Afrika belê word.

Die *British Medical Association* is 'n Vereniging wat by ons eie Vereniging aangesluit is en ons verstaan die beginsels volkome wat ons kollegas beweeg het tot hulle besluit om die Gesamentlike Vergadering van hierdie jaar te kanselleer. Ons betreur die aanleiding wat hulle genoop het om dit te doen en wat so ver te kort skiet aan ons tot dusver trotse tradisies van Suid-Afrikaanse gasvryheid.

SUID-AFRIKAANSE KOLLEGES VAN INTERNISTE EN CHIRURGE?

Die gestadige ontwikkeling dwarsdeur die land van 'n begeerte om Suid-Afrikaanse Kolleges van Interniste en Chirurge te stig, weerspieël die toenemende belangstelling van die mediese beroep in die probleme van na-graadse geneeskundige opleiding.

'n Belangrike stap in verband met hierdie probleme is op 13 Desember 1949 gedoen toe onder beskerming van die Suid-Afrikaanse Geneeskundige en Tandheelkundige Raad belanghebbende liggame (met inbegrip van die verteenwoordigers van die Mediese Vereniging van Suid-Afrika) uitgenooi is na 'n *Konferensie oor Na-graadse Geneeskundige en Tandheelkundige Opleiding, Eksamens en Registrasie in die Unie.* Hierdie Konferensie was slegs ondersoekend van aard maar die werk van die deelnemende liggame was uiters geslaag en bemoedigend met die gevolg dat 'n tweede konferensie op 10 Mei 1951 belê is. Dit is inderdaad bevredigend om sulke opvallende vordering in so 'n kort tydperk aan te meld.

Alhoewel die konferensie met na-graadse mediese probleme in die algemeen te doen sal hê, is dit heeltemal duidelik dat een van die belangrikste ondernemings wat uit hierdie besprekings te voorskyn kan tree, 'n Suid-Afrikaanse Kollege of Kolleges van Interniste en Chirurge kan wees.

In hierdie saak het ons eie Vereniging 'n primêre en blywende belang want hy het in beginsel die stigting van so 'n Kollege goedgekeur en hy het so ver gegaan om selfs voorsiening te maak vir geldelike hulp in die vroeë stadiums van die Kollege. Op sy jongste vergadering het die Federale Raad inderdaad selfs 'n spesiale Komitee ingestel wat met die praktiese besonderhede van die voorgenome Kollege te doen sou hê. Daar word gehoop dat op sy volgende vergadering die personeel van hierdie Komitee aangestel sal word omdat 'n aansienlike mate van ondersoek en beplanning nog gedoen moet word.

Dit sou voorbarig wees om byvoorbeeld op hierdie stadium te besluit of die Kollege van Interniste en Chirurge afsonderlike liggame of 'n gesamentlike liggaam moet wees. Dit is egter seker dat die prognose van hierdie onderneming uitstekend is aangesien dit op die hoogste peil deur almal behandel word wat werklik belang in en by die saak het. 'n Suid-Afrikaanse Kollege kon nouliks onder beter omstandighede in die lewe geroep word as dié wat sy huidige ontwikkeling beheer.

A WHOOPING COUGH EPIDEMIC IN AN URBAN NATIVE LOCATION

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During the autumn and winter months of 1949 there occurred an epidemic of whooping cough which affected the infant and child population of Lamontville, a sub-economic native housing scheme within the municipal area of Durban. The following is an account of this epidemic and the activities undertaken by the Health Centre in order to deal with it.

The Lamontville Health Centre is incorporated in the Training Scheme for Health Personnel, Durban. Gale (1949) has given a description of the functions of this institution.

The Population of Lamontville. Lamontville consists of 682 homes. Of these, 200 homes were in the process of construction in 1949. By June, 128 of these latter homes had been occupied by families who had moved in within the previous 3-4 months.

On the whole the population of Lamontville must be regarded as a stable one from a migration point of view. Nevertheless, there are a considerable number of adults and children moving in and out of the location. Many of these people come to Lamontville with the express purpose of obtaining medical attention for their ailments.

In a migration study in Lamontville undertaken at the Training Scheme for Health Personnel in 1949 (Chesler), it was found that 7.2 persons on the average slept in each house nightly, giving a total population of 4,300 persons, though a proportion of the people are 'visitors' living in Lamontville for relatively short periods.

Thus there are ample opportunities for the introduction of infectious diseases from outside this community.

The children of Lamontville nearly all attend the Lamontville Government Primary School. The children in the substandards (about 200 pupils) are taught in the communal hall. The higher classes (650 pupils) attend the main school about three-quarters of a mile away. A few scholars from outside Lamontville attend these schools and form another channel for the possible introduction of infectious disease.

Ninety-two children aged between two and six years attend a Nursery School in the location. This also acts as a possible factor in the rapid spread of infectious respiratory disease. These children and their home contacts have been studied separately in order to assess the part played by a Nursery School in the spread of whooping cough.

In addition to the mixing of children in the schools, there is a very free mixing of children in the streets and yards of Lamontville.

Attitude of the People to Whooping Cough. On the whole it appeared that the commonest attitude was that whooping cough was a common cold (*Nkohlana*) and that it was best treated with a purge and/or an enema. When the whoop stage appeared some referred to it as *impenge*. This term seemed to be purely descriptive of the whoop. Some recognized the Xhosa name *Nkonkonko*, which is also apparently descriptive only. The attitude of people in Lamontville was that the disease was a minor one like *nkohlana*, which comes from the air, much as the average European regards the common cold. One Health Assistant found that some people regard whooping cough as a normal stage in the child's development, in the way that some Europeans have regarded measles. Hardly anyone regarded the disease as serious.

A certain number of mothers refused immunization against whooping cough on religious grounds ('Zionists', 'Shembeites', etc.). Another group refused because the children were 'too young', 'too ill' or 'too weak'. One mother refused immunization saying, 'If my child gets whooping cough, I know how to treat him. I can get a bottle of cough mixture for a sixpence at the chemist.'

A large number of women, however, recognized the English term 'whooping cough' and accepted immunization for their children.

The Activities of the Health Centre. The development of the aims and methods of Health Centres in South Africa have been described elsewhere by Kark (1942, 1944, 1950), Gear (1943), Kark and Kark (1945), Gale (1946, 1949), and Kark (1948). The use of Health Centre personnel in the control of epidemics has been described by Kark (1943) and Le Riche (1945).

In the area demarcated by the Lamontville Health Centre for its family health and medical care programme, a record of the population is kept by the Health Centre staff. Each family has its family file in which are kept social data (e.g. family census, family tree, housing, etc.), as well as the clinical findings of the members occupying the house.

Health Assistants visit routinely all the homes in the Health Centre's area. The main purpose of these visits is health education of the people. Such education includes the value of attendance at the Mother and Child Sessions at the Health Centre, and of immunization. Field workers were instructed to advise mothers to take their children to their doctors if whooping cough (or any other disease) was suspected.

At the Health Centre the combined anti-diphtheria and anti-pertussis vaccine produced by the South African Institute for Medical Research is used.* Inoculation at the Health Centre was often not possible because mothers tended to present their children only when they were ill. Therefore in 1949 the Health Centre began to complete unfinished courses of injections in the home. Again in May and June 1949, when the epidemic of whooping cough was developing, the Health Centre carried out an intensive drive to inoculate as many children as possible

* This vaccine consists of 12,000 million H. pertussis in 1 c.cm. Diphtheria Formol-toxoid. Three subcutaneous injections are given. At the first injection 0.5 c.cm. of the vaccine is given, three weeks later 1.0 c.cm., and then two weeks later the third dose of 1.0 c.cm. is given. A booster dose of 1.0 c.cm. is injected when there is danger of exposure, e.g. on entering school, during epidemics, etc.

in a short time. The plain anti-pertussis vaccine (S.A.I.M.R.) was used because it was administered in three injections at weekly intervals. A course was thus completed in two weeks, instead of five as with the combined anti-diphtheria and pertussis vaccine ordinarily used. In May and June 335 children were inoculated in this way and 94 children were given booster injections. How far this inoculation during the epidemic was effective in preventing the spread of the disease was difficult to assess.

EPIDEMIOLOGICAL FEATURES OF THE EPIDEMIC

Four cases of whooping cough came to our notice in the last three months of 1948, but this account deals only with cases which occurred during the first seven months of 1949. There were 103 cases in Lamontville, all in children born in 1940 or later. The total child population in this age group was 1,117.

Although there were occasional cases in the first three months of 1949, the disease became epidemic in April with a peak during May and a fairly sharp decline in the number of cases in June (Chart I). The disease has an incubation period of seven to 14 days (Harries and Mitman, 1940) and one would accordingly expect a curve with a fairly sharp rise and fall. Of the 103 cases the date of onset was not noted in nine instances.

The 103 cases diagnosed occurred in 71 homes in the following distribution:

Homes with one case	47
Homes with two cases	17
Homes with three cases	6
Homes with four cases	1

When the homes in which the cases occurred were plotted on the map of Lamontville, it could be seen that most cases occurred in several groups of homes close together, although some cases occurred in isolated homes.

Relation of the Epidemic to Active Immunization by Use of Vaccine. By the end of 1948 there were 95

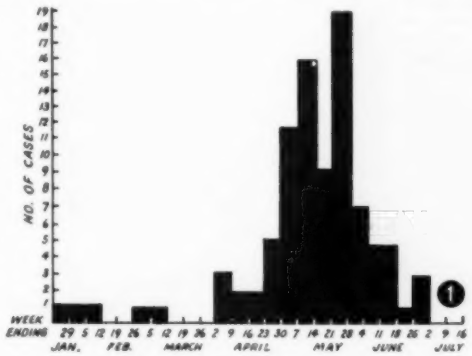

Fig. 1. To show the times of commencement of symptoms in 94 whooping cough patients.

children who had had the full course of three injections of combined anti-diphtheria and pertussis vaccine. (In May 1949, 94 of these children were given 1 c.c. booster doses of vaccine.) These 95 children are compared with the remaining 1,022 children (Table I). This latter group consisted of children who had had less than the recom-

TABLE Ia. INCIDENCE OF WHOOPING COUGH AMONG CHILD POPULATION IN RELATION TO AGE, SEX AND INOCULATION

		1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	?	Total
Total No. of children in area ..	M	33	34	39	50	48	58	68	67	94	45	13	549
	F	50	32	47	32	44	67	58	91	93	42	12	568
	Total	83	66	86	82	92	125	126	158	187	87	25	1,117
No. of children who got whooping cough during epidemic ..	M	1	2	1	1	4	6	5	5	14	3	—	42
	F	1	3	2	2	5	12	11	6	14	4	1	61
	Total	2	5	3	3	9	18	16	11	28	7	1	103
No. of children inoculated before 1 January 1949	M	—	2	3	6	5	5	9	5	4	—	—	39
	F	2	—	7	8	11	5	9	14	—	—	—	56
	Total	2	2	10	14	16	10	18	19	4	—	—	95
No. of inoculated children who got whooping cough	M	—	—	—	—	—	—	—	—	—	—	—	—
	F	—	—	—	—	1	1	—	—	—	—	—	2
	Total	—	—	—	—	1	1	—	—	—	—	—	2
No. of uninoculated children who got whooping cough	M	1	2	1	1	4	6	5	5	14	3	—	42
	F	1	3	2	2	4	11	11	6	14	4	1	59
	Total	2	5	3	3	8	17	16	11	28	7	1	101

mended course of injections or who had been inoculated after 1 January 1949.

A previous history of whooping cough was obtained from the parents of 20 children. None of these are included in the group of 95 inoculated children. They were not excluded from the uninoculated group for the following reasons: (*a*) The reliability of the history was unknown. (*b*) Many more children than this number must have had whooping cough in the past. (*c*) Any bias which has resulted from including them is *against* the effectiveness of the vaccine used and will not invalidate the statistical findings.

During this epidemic 103 children out of 1,117 (9.2%) in the 1940-49 age group developed whooping cough. Only two (2.1%) of the abovementioned 95 inoculated children developed the disease as compared with 101 (9.9%) of the remaining 1,022. This difference is significant.*

TABLE Ib. RELATIONSHIP OF EPIDEMIC TO INOCULATION OF CHILDREN IN AGE GROUPS

	1940–44	1945–49	Age Unknown
Total No. of children in area	409	683	25
No. of cases of whooping cough	22	80	1
Incidence of cases as % of total	5·38%	11·74%	—
No. of children inoculated	44	51	—
No. of cases in inoculated children	1	1	—
Incidence in inoculated children	2·27%	1·96%	—
No. of children uninoculated	365	632	—
No. of cases in these children	21	79	—
Incidence in uninoculated children	5·75%	12·50%	—

The Epidemic in Relation to Age of Children. It was found that there was an increased incidence of the disease in younger children (Table Ia). There was a fairly sudden rise in the 1945 group and those born later. The children have therefore been analysed in two age groups, viz., 1940-1944 and 1945-1949 (Table Ib). The 25 children of unknown ages are omitted as their numbers were too small to affect the calculations materially.

There was a significantly lower incidence of whooping cough in the older children (Table Ib). The possible explanation of this is the frequent exposure to infection in such a community, so that children develop a considerable degree of natural immunity by the time they have reached the age of five years.

In the older age group there was no significant difference in the incidence of whooping cough among the inoculated children as compared with the uninoculated children. In the younger children there was a significantly lower incidence among the inoculated.

The Epidemic in Relation to Sex. Bradford (1941) states that whooping cough is 'more common in the female, especially above the age of 10 years'. We found that the case incidence among all the boys was 7.65% compared with 10.74% in the girls. There were similar differences when specific age groups were compared, but in none of these were the differences significant. Perhaps the analysis of larger series of figures would confirm Bradford's contention.

The Epidemic in Relation to the Nursery School. Allen-Williams (1945) found that 'children at any age attending a day nursery school are more liable to contract infections than are children living at home'. Similarly McLaughlin (1947) found that the incidence of respiratory tract infections was from two to eight times greater in nursery children than among those living at home. Of the 92 children attending the Lamontville Nursery School (Table II, Group A) 17 children (18.2%) developed whooping cough during the epidemic. This incidence was significantly higher than that which occurred among the children who were neither attenders nor home contacts of Nursery School attenders (Table II, Group D) despite a higher percentage of inoculated children in the Nursery School. The incidence of the disease among children who attended the Nursery School plus their home contacts (Table II, Group C) was also significantly higher than among the remaining children. The incidence among the home contacts of nursery school attenders (Table II, Group B) was not significantly higher than among the children who were neither attenders nor home contacts of attenders (Group D).

TABLE II. INCIDENCE OF WHOOPING COUGH IN RELATION TO ATTENDANCE AT NURSERY SCHOOL

	Group A	Group B	Group C	Group D
No. of children	92	116	208	909
No. inoculated before 1/1/49	37 (40·2%)	21 (18·1%)	58 (27·9%)	37 (4·1%)
No. developing whooping cough	17 (18·5%)	15 (12·9%)	32 (15·4%)	71 (7·8%)
Difference (compared with D) in %	10·7%	5·1%	7·6%	—
S.E. of difference	4·1	3·2	2·6	—
Difference S.E. of difference	2·6	1·6	2·9	—

Group A: Children attending nursery school.
Group B: Children born 1940–1949 living in same homes as children attending nursery school, but excluding attenders.
Group C: Combined groups A and B.
Group D: Children born 1940–1949 neither attending nursery school nor home contacts of these.

The incidence of whooping cough during the epidemic was significantly lower in the inoculated children as

* In this paper a difference has been regarded as being statistically significant if the difference has been at least twice as great as the standard error of the difference, i.e. the probability was less than one in 20 that the difference was due to chance only (Bradford Hill, 1946).

offered to doctors . . .

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compared with the uninoculated in the following groups (Table III):

1. Nursery School attenders (Group A).
2. Home contacts of Nursery School attenders (Group B).
3. The combined group of 1 and 2 (Group C).

Among the children who were neither attenders nor home contacts of attenders (Table III, Group D) the incidence was not significantly lower among the inoculated as compared with the uninoculated children.

TABLE III. INCIDENCE OF WHOOPING COUGH IN RELATION TO ATTENDANCE AT NURSERY SCHOOL AND INOCULATION

	Group A	Group B	Group C	Group D
Number of children	92	116	208	909
(*a*) No. of children inoculated before 1/1/49	37	21	58	37
No. of inoculated children getting whooping cough	1 (2·7%)	—	1 (1·8%)	1 (2·7%)
(*b*) No. of children not inoculated..	55	95	150	872
No. of these who developed whooping cough	16 (29·1%)	15 (15·3%)	31 (20·7%)	70 (8·0%)
Difference in incidence in (*a*) and (*b*)	26·4%	15·3%	18·9%	5·3%
S.E. of difference ..	3·3	3·7	3·9	2·8
Difference/S.E. of difference	8·0	4·1	4·8	1·7

Groups A, B, C and D as in Table II.

Among the children who were not inoculated against whooping cough (Table IV) the incidence of the disease, as compared with children who neither attended nursery school nor were home contacts of attenders (Group D), was significantly higher among:

1. Nursery School attenders (Group A).
2. The combined group of attenders plus home contacts of attenders (Group C).

Among the home contacts of attenders (Group B) the incidence was not significantly higher.

It was possible that the apparent higher incidence of whooping cough at the Nursery School was partially or wholly due to the fact that this group was more closely observed than were other children. The high incidence among the other children from the same homes, however, suggests that this is not an important factor. It should be noted, too, that every home was routinely visited by Health Centre Staff during the epidemic as at other times.

On the whole it would appear that the nursery school facilitated the spread of the epidemic among its children and among the children living in the same homes as the nursery school children. Inoculation of children at nursery school against whooping cough appears to be effective and desirable in view of the ease of spread of the disease.

TABLE IV. INCIDENCE OF WHOOPING COUGH AMONG CHILDREN WHO WERE NOT INOCULATED IN RELATION TO ATTENDANCE AT NURSERY SCHOOL

	Group A	Group B	Group C	Group D
No. of uninoculated children	55	95	150	872
No. of cases among these	16 (29·1%)	15 (15·3%)	31 (20·7%)	70 (8·0%)
Differences as compared with Group D	21·1%	7·3%	12·7%	—
S.E. of Difference..	5·9	3·8	3·4	—
Difference/S.E. of difference	3·6	1·9	3·7	—

CLINICAL FEATURES OF THE WHOOPING COUGH CASES

Although 103 cases were diagnosed, it is probable that there were cases which were missed because they were either too mild and went unnoticed by parents or Health Centre workers, or they were not brought to the Health Centre for treatment but taken elsewhere without our knowledge.

In general, the symptoms and signs of the patients were those described by Harries and Mitman (1944).

The complications that developed were otitis media, deterioration of nutritional status and bronchopneumonia. Of the children who developed bronchopneumonia, one died and two were suspected of having developed bronchiectasis.

Those cases treated by the Health Centre were given a stock mixture containing a sedative cough linctus plus Tinct. Belladonna. If there was evidence of otitis media or bronchopneumonia, sulphonamides and/or penicillin were given. Only crystalline penicillin in aqueous solution was available at that time and our nurses could not visit more often than once or at most twice daily, so that the injections of penicillin were not given three-hourly. Nevertheless it was felt that it was well worth giving, as did others elsewhere (Wheatley, 1947; Thompsett *et al.*, 1949).

Dietary advice given was that the child should be given small frequent feeds, especially where there was vomiting. Where indicated, available food supplements such as vitaminized oil and dried skim milk were prescribed.

Tuberculin patch tests were used to select for special care those children who might be the victims of primary tuberculosis.

Whenever the condition of the patient warranted, the Health Centre home nurse was asked to visit the home, supervize the nursing, give treatment and report on the patient's progress. In this way many complications were

prevented or discovered early, and the nutrition of the patients maintained as far as possible. It is noteworthy that the only death occurred in a patient where the mother refused the services of the Health Centre staff.

DISCUSSION

The effectiveness of active immunization against whooping cough has been discussed at length in the literature. Silverthorne and Cameron (1943) extensively reviewed the effects of anti-pertussis vaccines as tried in Europe and America. In South Africa, Ordman (1949) gave figures which suggested the effectiveness of the vaccine produced by the South African Institute for Medical Research. It is felt that the results of the inoculation of children in Lamontville provide more conclusive evidence of the effectiveness of this vaccine.

The problem of getting the vaccine to the patient remains. The Health Centre approach is a potentially effective means of getting a community to make use of the available health services.

This account of an epidemic of whooping cough in an urban Native township illustrates how a team of medical officers with auxiliaries approached a particular health problem in the community.

SUMMARY

An epidemic of whooping cough which occurred in a Native urban township is described.

The epidemiology of the disease was studied in relation to residence, age, sex, inoculation state and attendance at a nursery school.

1. There was a significantly lower incidence in older children.

2. The incidence was higher among girls but not significantly so.

3. Only 2.1% of children who had been inoculated with anti-pertussis vaccine before the onset of the epidemic developed whooping cough as compared with 9.9% of those who had not been so inoculated. This difference was significant.

4. Children attending a nursery school had an incidence significantly higher than children who did not attend, but inoculation appeared to protect attenders as well as non-attenders.

5. Children coming from homes where at least one child attended nursery school had an incidence significantly higher than children from other homes. Inoculation appeared to be effective in protecting these children too.

The clinical features of the cases are discussed.

The activities of a Health Centre of the Union Health Department's Training Scheme for Health Personnel in the prevention, detection and management of cases are described.

Thanks are due to the Secretary for Health for permission to publish this paper. I also wish to express my gratitude to my wife, Dr. E. J. Salber, for her invaluable criticism and help, and to Dr. S. L. Kark, Mrs. E. Bradshaw and many other members of the staff of the Institute of Family and Community Health for their advice and assistance in the preparation of the material for publication.

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DOUBLE DUODENAL ULCER WITH PERFORATION FOLLOWING A BURN

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Johannesburg General Hospital

In 1832, 10 years before Thomas Curling's report appeared, Dupuytren reported on changes in the intestinal canal which follow burns. Violent congestion, severe gastro-enteritis and more or less deep ulceration was described. The term 'Curling's ulcer' was adopted because of the large number of cases he collected.

Incidence: Statistics on the incidence of Curling's ulcer vary considerably. J. J. Levine in 1929 stated that over a period of 48 years in the Johannesburg Government Mortuary, where at that time approximately 1,000 post mortems were being performed annually, he encountered only two cases, both occuring in children. The accepted incidence, however, is 3.8% of all fatal burns cases (Harkins). Statistics indicate that the condition is more common in children and females, and the ulcer is said to occur from 18 hours to 100 days after the burn.

Aetiology: Numerous theories of the aetiology of Curling's ulcer have been advanced, but that most widely accepted is a local thrombosis which is the result of toxaemia and sepsis associated with the burn.

Histopathology: The description of Pack (1926) may be summarized as follows: Duodenal ulcers following burns may be single or multiple. The situation is either in the first or second part of the duodenum. The size varies from a pin-head to a quarter inch. The shape of the ulcer is irregular, dentate or long and narrow and occasionally circular. The edges are sharply cut, the base is clean and greyish, and there may or may not be inflammation at the margin. The outcome of the ulcer is perforation, haemorrhage or healing.

CASE REPORT

The patient, an unmarried female aged 34 years, was admitted to the Johaanesburg General Hospital on 8 September 1950. She was heavily intoxicated and most unco-operative. She had been perfectly well until two hours previously, when her flimsy dress caught alight. The burn area was calculated as 60-64% of the body surface and the burns were of second and third degree. The pulse was 88 per minute, the blood pressure 80/60 mm. Hg., and the haemoglobin 80%. The patient stated she had been suffering from anaemia for a long time.

The burnt clothing was removed; no cleansing was attempted and the wounds were dressed with vaseline gauze and pressure dressings applied. The patient was put on to Crystacilline 300,000 units twice daily, and Streptomycin ½ gm. twice daily. Shock was combated by intravenous therapy: during the first 10 hours the patient received 6,500 c.c. of which 1,000 c.c. was serum and 1,000 c.c. blood.

She was kept on a diet high in protein and vitamins (approximately 200 gm. of protein were supplied daily). The haemoglobin dropped to 50%, but after multiple transfusions rose to 94%. The patient began to develop contracture deformities of her hips and feet and on 22 September a plaster-bed was constructed for her. She was a great problem in nursing. When the dressings were changed heavy morphia sedation and trilene analgesia was used. By the 20th day the patient had received a total of 19,000 c.c. intravenously. Except for occasional small rises in temperature she progressed favourably. The burn areas became infected, but the sloughs separated and on 2 October 1950 it was considered that the patient would be ready for skin grafting after a week.

On 4 October she rapidly deteriorated. She became unconscious. Her pulse was 170 per minute, a pulsus bigeminus and a pulsus alternans being present. The blood pressure was 130/80 mm. Hg., the haemoglobin 90%, the respiration 44 per minute. There was a leucocytosis of 20,000, and a pyrexia of 102° F.

The burns made physical examination difficult; there was very definite abdominal tenderness and a positive peritonitic sign. A portable X-ray of the chest showed clear lung fields, but a marked elevation of the right lobe of the diaphragm. A horizontal film of the abdomen was suggestive of free gas and fluid levels. At this stage the diagnosis of a perforated Curling's ulcer was made.

The serum potassium was normal; the serum albumin was 2.9 gm. and the globulin 2.8 gm., the total proteins being 5.7 gm.

On 6 October 1950 the patient's general condition had markedly improved, following administration of Aureomycin, Penicillin, vitamin K, Heparin and Digoxin. The blood urea was 77 mg. % and the chlorides 615 mg. %.

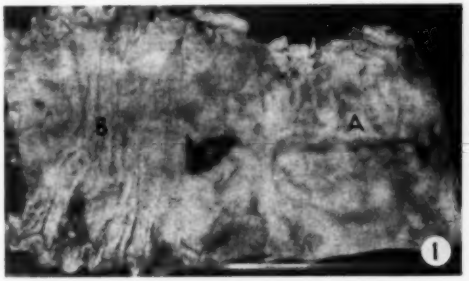
On 8 October 1950 the patient's general condition gradually deteriorated, an hypostatic pneumonia having set in. On the next day the patient died.

Special investigations carried out just before death were: Blood urea, 98 mg. %; bilirubin, less than 0.5 mg. %; icteric index 14; serum albumin, 3 gm.; serum globuin, 3.4 gm.; serum sodium, 353 mg. per 100 c.c.

Autopsy Report. A well-nourished female, who had 64% of the surface area involved in healing second and third degree burns.

The Lungs showed evidence of hypostatic pneumonia which was considered to be the cause of death.

Gastro-intestinal Tract. There appeared to be a marked excess of omental fat with a fair number of adhesions near the hepatic flexure. There was no free fluid in the peritoneal cavity.



A Curling's ulcer approximately ¾ inch long and irregular in shape was found 1 inch distal to the pyloric sphincter on the antero-superior wall of the first part of the duodenum (Fig. 1). The ulcer had perforated, but was sealed off by omental adhesions. A blackish discoloration (due to local thrombosis) round the edge of the ulcer was a prominent feature. Another, more circular ulcer which had not perforated was present in the second part of the duodenum.

Microscopy of liver, kidney and heart muscle showed nothing more than some degree of post-mortem autolysis.

SUMMARY

1. Curling's ulcer is described with brief reference to history, incidence, aetiology and histopathology.

2. A case is described in which perforation occured on the 27th day.

I would like to thank Mr. A. Lee McGregor for granting permission to publish this case and for his help and encouragement.

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PASSING EVENTS

THE LATE DR. A. J. STALS

We deeply regret to record the death of Dr. A. J. Stals, Minister of Health and Social Welfare, who died in Cape Town on 5 February 1951. A State funeral service was held in the Groote Kerk, Adderley Street, Cape Town, on Thursday, 8 February. Dr. Stals was buried at Worcester on Friday morning, 9 February.

* * * *

Dr. J. Pasvol, formerly of Moorreesburg, Cape Province, has left for London to pursue post-graduate studies in ophthalmology.

Dr. Pasvol expects to be away for about two years.

RADIOLOGICAL SOCIETY OF SOUTH AFRICA

The newly elected Council of the Society for 1951 is as follows: *Chairman*: Prof. S. F. Oosthuizen; *Honorary Secretary and Treasurer*: Dr. F. W. McLachlan; *Members of Council*: H. Jackson, J. Kaye, J. Nel, N. Sacks and M. Weinbren.

THE UTRECHT FAIR: MEDICAL & PHARMACEUTICAL SECTION

For the first time at the International Utrecht Spring Fair (3-12 April 1951) there will be an extensive exhibit of medical and surgical instruments and apparatus; medicines will be found there as well.

The Netherlands medical and pharmaceutical industries have gained in importance in the course of years. Under the influence of increasing industrialization, the Netherlands metal-working industry took rapid strides, by which the production of medical and surgical instruments and apparatus could be notably increased.

As far as hospital furniture is concerned, practically everything needed for Sanatoria, Nursing Homes, etc., is manufactured in the Netherlands. This production extends from simple instrument tables, food wagons, operation beds, to the most complicated operating tables.

Together with hospital furniture, sterilization apparatus is taking an important place at the Industries Fair. In this province, the Netherlands industry supplies, amongst others, various types of hot air and formalin sterilizers for bandages and instruments, and apparatus for obtaining sterile water.

The group of prominent Netherlands industries, which has specialized in the manufacture of X-ray apparatus, will also be represented at the Fair. The finished products from these industries, include, amongst others, apparatus for so-called mass X-raying, ray treatment, apparatus for electro-surgery, instruments measuring the structure of crystal, and instruments for X-ray photography.

Not only in the province of instruments and installations has the Netherlands industry shown an important development. The pharmaceutical industries have also shown a notable increase in their products and launched many new articles on the market. This applies specially to the industry for synthetic medicines.

As well as these medicines the Spring Fair will exhibit various vitamin preparations, organic preparations and pharmaceutical extracts.

In addition some firms will participate offering bandages, plasters, etc.

REVIEWS OF BOOKS

PHYSICS IN RADIOLOGY

Physics in Medical Radiology. By Sidney Russ, *C.B.E.*, D.Sc., F.Inst.P., L. H. Clark, Ph.D., F.Inst.P., and S. R. Pelc, D.Ph. (Pp. 296 + viii. With 106 figures. Second edition revised. 25s.) London: Chapman & Hall Limited. 1950.

Contents: *Part I*: Physics. 1. Electrostatics and Current Electricity. 2. Electrical Conductivity of Cases. 3. Electro-magnetic Radiation. 4. Cathode Rays and X-rays. 6. Measurement of X-ray Intensity. 7. The Wave-length determination of X-rays. 8. Planck's Quantum Theory and the Compton Effect. 9. Natural Radio-activity. 10. The Radio-active Emanations and Active Deposits. 11. Atomic Structure, the Displacement Law and Artificial Radio-activity. 12 Dosage in Radium and Radon Therapy.
Part II: Photographic Processes and Electrotechnics. 13. Photography. 14. X-ray Exposures. 15. Tracer Techniques. 16. X-ray Tubes and Rectifying Valves. 17. Alternating Current Phenomena, Alternators, Electric Motors, High-Frequency Currents. 18. High-Tension Generators. 19. Apparatus used in Radiography and Radiotherapy. Appendix. Books of Reference. Index.

The subject matter of this book is a necessary basis for all workers in medical radiology at the professional level. It goes well beyond the usual first-year physics courses of our Universities, but as it starts with the elements of electrostatics and of current electricity, it should not prove unduly difficult for those whose physics is somewhat 'rusty'. The authors use some elementary calculus in places, but not so freely as to prevent those unversed therein from following the main thread. Incidentally, the use of the calculus is so valuable in physics that this easy branch of elementary mathematics should long ago have been included in the school courses of mathematics required for admission to University medical courses.

This book is to be commended for its wide scope, for a praiseworthy attempt to give a sound though not over-technical understanding rather than a set of rules-of-thumb. In addition a considerable amount of 'practically' useful information is included. On the other hand, the wording is at times unnecessarily obscure (e.g. definition of the Henry on p.32; the definition of P as 'the probability (P) of measuring a counting rate . . .'). In some places a topic has been treated so briefly as to make it unduly difficult. Some of these topics might perhaps have been omitted and more space devoted to the discussion of such important matters as X-ray characteristic radiation. Part of the theory of electrolysis is quite obsolete and it is surprising to find it in such a recent edition. There are also too many misprints.

In spite of these criticisms, however, it is considered that the book is useful in a radiology class and of value to medical men seeking a better understanding of such important aspects of medical work as X-rays, natural and artificial radio-activity, and isotopes.

THE MYTH OF MODERNITY

The Myth of Modernity. By Charles Baudouin. (Pp. 169. 15s.) London: George Allen & Unwin Ltd. 1950.

Contents: 1. From the Myth of Progress to the Myth of Modernity. 2. The Clean Sweep. 3. Angelism. 4. Politeness. 5. Technique versus Nature. 6. Baudelaire and the Modern Man. 7. Of the Prestige of Action. 8. Communions. 9. Opinion and Tolerance. 10. Humanism. 11. Eloquence on Trial. 12 Of Reading. 13. Technique versus Mysticism. 14. A Moderate View of Happiness. 15. The Paradoxes of Education. 16. The Gift of Childhood. 17. Confidence in Mankind. 18. An Apology for the Unruly. 19. Withdrawl into one's Tent. 20. Verlaine. 21. Art and the Epoch.

Like a contemporary but slightly petulant Pascal, M. Baudouin seeks to analyse the sickness which has affected civilized society. Perhaps he should not be blamed that his prose is occasionally stilted and precious; the mannerisms may well have been acquired in the process of translation. Nevertheless, his readers, although mentally less healthy than their ancestors, are rather better informed, and do not need to be convinced that the times are out of joint. They may be slightly puzzled by an author who evidently has a serious purpose, and yet intermittently interrupts his argument to make rather heavy epigrams.

The thesis is put forward that, for the ideal of progress which their parents had, the present generation has substituted the myth of modernity, an epoch's trick of glorying in the fact of its own existence. A desire for progress gave humanity reasons to aspire to better things, but the myth of modernity seems to give humanity reasons for fleeing from itself, reasons for unhappiness in that the man who runs away from himself

is an unhappy man. 'It must be admitted that it is not very healthy for a man to go too fast.'

The ingenious suggestion is made that the modern taste for smooth and simple objects, the craving for simplification, the desire for bare walls and plain carpets, is but an attempt to find rest from the surfeit of sensation with which men have deliberately gorged themselves, a relief from 'the dancing, jigging turmoil of the day'. Humanity has been nauseated by an excess of riches too easily obtained. The profusion of books, newspapers and radios does not appear to have increased men's wisdom, and the average culture of to-day seems inferior to that of yesterday. Modern man has multiplied his sensations to the point of confusion. The cinema allows us to traverse five continents in 20 minutes. Such speed of sensation is only possible if individual views are superficial, deprived of substance and reduced in significance. It is the slogan which receives widest attention. The problem for man is to limit his excursions into the world of the sensations which have become too accessible, and to take only as much as he can tolerate. He will find further salvation if he discards the hankering to measure himself against his fellows. If this desire to prevail over others is dangerous in the individual, it becomes much more perilous when it takes possession of a nation.

The essays which follow are of considerable interest. Many will disagree with the writer's conclusions, but few will deny his intellectual liveliness. M. Baudouin is a romantic reactionary in an age which seems to him like 'a mechanical bird without a bill, a bird without a song, and which does not even feel the need of a song'.

1950 Year Book of Radiology

The 1950 Year Book of Radiology. Edited by F. J. Hodges, M.D., J. F. Holt, M.D., I. Lampe, M.D., and R. S. MacIntyre, M.D. (Pp. 480 with 400 figures. $6.75.) Chicago: The Year Book Publishers, Inc. 1950.

Contents: Part I: Diagnosis. 1. Introduction. 2. Teaching Methods and General Technical Developments. 3. The Head. 4. The Spine and Extremities. 5. The Chest. 6. The Gastrointestinal Tract. 7. The Genitourinary Test.
Part II: Radiation Therapy. 8. Introduction. 9. Physics and Technic. 10. Radiobiology. 11. Protection and Hazards. 12. General Clinical Considerations. 13. Female Genitalia. 14. Head and Neck. 15. Skin. 16. Breast. 17. Gastrointestinal Tract. 18. Lymphoblastoma and Leukemia. 19. Genitourinary Tract. 20. Bones and Joints. Miscellaneous.

To those interested in radiology the *Year Book* offers in abstract form the cream of the voluminous radiological literature of the period June 1949 to June 1950. As is usual in this series the *Radiological Diagnosis* and *Radiation Therapy* sections are edited by raidologists of renute who contribute a moderate number of interesting criticisms or comments on the articles abstracted. The number of these comments could be increased.

The 20 questions of the Quiz are a good test of one's familiarity with the current literature.

In Part I there is a rich variety of practical clinical diagnostic material that covers a wide field ranging from such an oddity as a case of multiple myelomatosis presenting as osteoblastic lesions in the skeleton, to the everyday problem of recognizing early gastric carcinoma. The illustrations are good but it is a pity that a few 'positives' of the original X-ray plates have been permitted to appear.

Technical advances in diagnostic radiology include the use of new contrast agents, apparatus for the direct projection of full-sized radiographs, several new variations of angiocardiographic instruments and steady progress in the intensification of the screen image.

Part II reviews radiation therapy from the physical, radiobiological and general practical clinical aspects. A welcome additional section on protection and hazards emphasizes the dictum that ionizing radiations are always 'dangerous' and that 'safety' is only relative. With the increasing use of the radio-active isotopes and X-ray plants the hazards should never be forgotten.

An interesting development is the experimental use of chemical agents to influence successfully radiation effects.

The book is essential in every radiologist's library.

Principles of Ophthalmology

Principles of Ophthalmology. By Thomson Henderson, M.D. (Pp. 230. 20s.) London: William Heinemann, Medical Books Limited. 1950.

Contents: 1. The Mammalian Globe. 2. The Angle of the Anterior Chamber. 3. The Mechanism of Accommodation. 4. The Intra-Ocular Pressure. 5. Glaucoma. 6. The Corneo-Sclera. 7. Clinical Conclusions. Epilogue.

To the student and general practitioner the title of this volume is misleading in that the book is of interest only to the ophthalmologist and the physiologist.

The author presents an excellent study in comparative anatomy of the angle of the anterior chamber of the eye, adequately illustrated, and concludes from the evidence presented that the accepted theories of outflow of aqueous, the level of the intra-ocular pressure, and the mechanism of accommodation are not valid. It is postulated that the mechanism of maintenance of the intra-ocular pressure is identical with that occurring in the brain and that the figure of 25 mm. Hg universally accepted as being normal is, in fact, 2½ times too high. How, he asks, can the retina, which consists of delicate, highly specialized neural tissue arising as an outgrowth of the brain, be expected to withstand a pressure which, if applied to the parent tissue, would cause considerable damage?

Why, he also enquires, should the ciliary muscle be the only unstriped muscle in the whole of the animal kingdom which is credited with having only a parasympathetic nerve supply?

From his comparative anatomical studies Thomson Henderson attempts to answer these and other questions, thus producing an entertaining book containing much food for thought. Though one cannot agree that some of the conclusions arrived at have sufficient evidence to support them, one feels that this is a sincere attempt to solve some of the physiological problems which beset us in ophthalmology. It deserves, therefore, to be thoroughly digested by all those concerned with the teaching of the physiology of the eye.

A History of English Public Health

A History of English Public Health, 1834-1939. By W. M. Frazer, *O.B.E.*, M.D., M.Sc., D.P.H. (Pp. 498 + xiv. With 16 plates. First Edition. 35s.) London: Baillière, Tindall & Cox.

Contents: Preface. Introduction, 1834-48. 1. Early Experiments in Sanitary Legislation and Organization, 1848-71. 2. The Rise and Development of Environmental Hygiene, 1871-1900. 3. The Personal Health and Social Services—Period of Preparation, 1900-7. 4. The Personal Health and Social Services—Period of Development, 1907-29. 5. Modern Public Health and Social Medicine, 1929-39. Epilogue. Index.

A history of English public health is in fact a description of the beginnings of organized health services anywhere, for it was in England that these services were first established and then so developed as to serve as the model for all others. The period covered by Dr. Frazer, 1834-1939, is that when the fundamental work was done and the general principles of community health and medicine soundly established. Poor relief and the removal of gross nuisances had had spasmodic earlier statutory recognition, but it was in the nineteenth century that public health properly emerged.

When it is recognized what all public health, directly and indirectly, has done for mankind—prevented the gross epidemics of the past; reduced the general, infantile and maternal mortality rates in dramatic fashion; increased the expectation of life; and lessened the hazards of many diseases and other afflictions—then it will be appreciated what a rich, indeed a dramatic, material was available here for a historian. The story is all in this book. The facts are there given in great detail about problems of sanitation, water supply, housing, communicable diseases, venereal diseases, tuberculosis, health insurance, school conditions, maternal and child health, medical research, and many others. The many efforts of trial and error, of success and set-back, are all told faithfully. In this important respect the full account and the inclusion of so many details—medical, administrative, legislative and political—provide the student with an excellent reference work.

The present reviewer, perhaps being too critical, feels a slight disappointment in that the author has not made perhaps the

rich dramatic subject live in his book with the full glory due to it. The heroes of public health—Chadwick, Budd, Snow, Simon and Farr—in every way deserving of as much recognition if measured by services to mankind and medicine, as such popular idols as Pasteur, Koch and Lister—do not shine in these pages with quite the expected lustre. Perhaps this is to expect too much in one book. When all the facts to be found in the confusing ebb and flow of legislation, and the slow progress of so much dependent upon trial and error have to be recorded fully and accurately, there is little scope or place for the spectacular and the dramatic in public health history.

Whether this is so or not does not alter the fact that this important book gives a full account of one of the greatest medical and social developments of mankind, which should be known by all seriously interested in health, medicine and welfare, whether English or not.

RADIOTHERAPY OF ORAL CANCER

Research on the Radiotherapy of Oral Cancer. By Constance A. P. Wood and J. W. Boag. (Pp. 148 with 77 figures. 12s. 6d.) London: His Majesty's Stationery Office. 1950.

Contents: 1. An Experimental Comparison between Gamma Rays and X-Rays. 2. Histological Investigations (by A. Glücksman and F. G. Spear). 3. Statistical Analysis of the History, Physical Signs and Response to Treatment. 4. Conclusions. 5. Future Research in Radiotherapy. Acknowledgements. Appendix A and B. References.

This scholarly report is profusely illustrated with photographs, colour reproductions, photomicrographs, line drawings, histograms, graphs, etc.

It is the outcome of team-work between the various departments of the Hammersmith Hospital, i.e. pathological, surgical, radio-therapeutic and statistical. This spirit of co-operation, which has resulted in an excellent report, should be encouraged in all hospitals.

The research task of discovering whether the shorter wave-length radiation from radium is more effective than the longer wave-length radiation of X-rays in causing tumour regression has been thoroughly investigated.

The report is based on work done since 1934, and the clinical results are assessed up to June 1950. Apart from this, the report includes an account of histological investigations done to determine the response of tumours to radiation, and the relationship of this response to cellular differentiation. The statistical analyses employ unique methods which appear to provide a very accurate assessment of the results.

In spite of the great advances being made in the technique of distribution and dosage control, the percentage of patients being cured with pharyngeal and oral cancer still remains depressingly low, and it appears that biological factors must be considered in future research in radiotherapy.

The final section of the report deals with the most recent developments in radiotherapy, and discusses possible future research.

This concise, clearly expounded and fully documented report should be read by all radiotherapists as an incentive to their own work, and by others interested in oral cancer, as it will widen their appreciation of the difficulties involved. The report could well serve as a model for any clinical research data.

PHYSICAL MEDICINE

Recent Advances in Physical Medicine. Edited by Francis Bach, M.A., D.M., D.Phys.Med. (Pp. 490 + xv. With 93 illustrations. 27s. 6d.) London: J. & A. Churchill Ltd. 1950.

Contents: Section 1. Physics, Anatomy and Physiology. 2. Physical Methods. 3. The Practice of Physical Medicine. 4. Organization of a Physical Medicine Department. 5. Physical Medicine in Public Health. 6. Rehabilitation and Resettlement. 7. The Teaching of Physical Medicine. Appendices. Index.

While this book is primarily intended for candidates sitting for the Diploma in Physical Medicine, it contains much that is of interest both to the physician and surgeon.

It is the first attempt by English authors to produce a comprehensive work on physical medicine, and should rather be regarded as such, since much of the matter published under the title of *Recent Advances* is certainly not of recent origin.

The most notable and recent work is that of Bauwens of St. Thomas' on electro-myography. Bauwens has done much to clarify the application and interpretation of the electromyograph and it now serves a valuable purpose in the assessment of prognosis in anterior poliomyelitis and peripheral nerve injuries. The relative values of the constant current output and constant voltage output muscle stimulators are discussed and the value of the strength-duration curves analysed.

This chapter on electro-diagnosis is clearly and concisely written and is of outstanding merit.

Since physical medicine touches every facet of general medicine and surgery, there are adequate chapters on its application to neuropsychiatry, thoracic disease, peripheral vascular disease, dermatology, ophthalmology, paediatrics and geriatrics.

The rehabilitation of paraplegics and hemiplegics is discussed in detail and emphasis is placed on the value of early rehabilitative measures in these conditions.

Any visitor to the Ministry of Pensions Centre at Stoke Mandeville cannot fail to be profoundly impressed by the manner in which paraplegics are re-abled to become self-supporting and to lead useful social lives.

Rehabilitation is discussed in relation to the background of National Health and it is a sharp lesson to any industrialized community to learn of the salvage of the industrially injured workman—the saving of otherwise wasted man-hours and the integration into the productive scheme of even the most disabled worker.

This book is of particular value to any doctor whose interest lies in the rehabilitation of the injured patient.

PROGRESS IN GYNAECOLOGY

Progress in Gynecology, Vol. II. By J. V. Meigs, M.D., and S. H. Sturgis, M.D. (Pp. 821 + xi. With illustrations.) New York: Grune and Stratton.

Contents: 1. Growth and Physiology. 2. Diagnostic Methods. 3. Functional Disorders. 4. Interrelationship of Endocrine Glands. 5. Sterility and Reproduction. 6. Infections and their Treatment. 7. Benign Growths. 8. Malignant Growths. 9. Operative Technique. 10. Preoperative and Postoperative Care. 11. Index.

The distinguished editors of this book have demonstrated the need for a progress report in gynaecology by the excellent survey which the volume under review comprises.

As the list of contents indicates, the field covered is very extensive. Practitioners will have a particular interest in Guttmacher's account of artificial insemination which deals not only with the techniques involved, but contains also an excellent statement of the medical, religious and legal problems involved in this procedure. Guttmacher introduces, in some cases, the interesting modification of adding a few drops of the husband's subnormal semen to the donor specimen. The reasons are probably more than the psychotherapeutic ones adduced, as it may make the bastardy of the issue more difficult to establish in law.

Interesting, also, is the inclusion in a progress volume devoted to gynaecology of the chapter on *Semen Analysis and Interpretation* by so distinguished an authority as Dr. Walter W. Williams. This section contains technical details about collection, preservation, gross and microscopic examination as well as staining of the seminal specimen. Dr. Williams' account includes a commonsense statement of the quantitative and qualitative requirements for assessing the status of seminal specimens.

Dameshek contributes a stimulating chapter entitled *Certain Hematologic Problems in Gynecology*. With characteristic vigour he puts forward the interesting speculation that an Rh-positive or an A mother might immunize an Rh-negative or an O foetus with the result that the foetus might produce antibodies harmful to the mother, thus possibly accounting for some forms of the severe haemolytic anaemias of pregnancy.

Apart from these more general aspects of the volume, there is a valuable and considerable amount of physiology, endocrinology and straightforward gynaecology which makes this attractive volume a pleasant addition to the library shelf of the gynaecological specialist as well as the general practitioner.

PRACTICAL GYNAECOLOGY

Practical Gynecology. By Walter J. Reich, M.D., F.A.C.S., F.I.C.S., and Mitchell J. Nechtow, M.D. (Pp. 449 + xvi. With 187 illustrations, including 55 subjects in colour. 80s.) Philadelphia: London: Montreal: J. B. Lippincott Company.

Contents: 1. Psychosomatics of Gynecology. 2. Practical Approach to a Gynecologic Diagnosis. 3. Biopsy and the Early Detection of Cancer. 4. Laboratory Findings in Gynecology. 5. Reproductive Endocrinology. 6. Menstruation. 7. Disturbances of Menstrual Function. 8. Anomalies and Malpositions of the Female. 9. Inflammatory Lesions. 10. Infections. 11. Traumatic Lesions. 12. Neoplasms. 13. Common Gynecologic Complaints. 14. Genital Fistulas. 15. Technics and Apparatus. 16. Low Fertility and Sterility. 17. Premarital Examination and Counsel.

The authors of this excellent volume have more than justified the title they decided to give to their work. This book represents a most adequate, concise and brilliantly illustrated account of the problems of gynaecological practice as the average doctor can expect to meet them.

Apart from the considerable amount of straightforward medical, surgical and endocrinological information, there is a most useful and comprehensive account of the psychological and sociological problems which will especially confront the young practitioner. It is well recognized that Medical School instruction in problems of sterility, infertility, artificial insemination and contraception are woefully inadequate in many parts of the world. In addition, the young doctor has usually had no guidance in the techniques of premarital counsel. The authors have much of value to impart on these topics and for this reason alone this book is strongly recommended, particularly to the recent graduate.

A valuable section of the book is the portion devoted to the investigation of the male in connexion with sterility. The authors include useful quantitative data on the basis on which to assess the status of a seminal specimen, together with a clear statement of the technique of doing sperm counts.

The important subject of dysmenorrhoea is very thoroughly surveyed and a very remarkable pictorial feature of the book is the superb set of colour illustrations which concludes a most beautifully produced and useful volume.

WALSHE'S DISEASES OF THE NERVOUS SYSTEM

Diseases of the Nervous System: Described for Practitioners and Students. By F. M. R. Walshe, M.D., D.Sc., F.R.S. (Pp. 359 + xvi. With 60 illustrations. 17s. 6d.) Edinburgh: E. & S. Livingstone, Ltd. Sixth Edition. 1949.

Contents: *Part I: General Principles of Neurological Diagnosis*. 1. Introduction: Non-Anatomical Factors in Diagnosis. 2. Anatomical or Localizing Factors in Diagnosis.
Part II: Descriptive Account of the More Common Diseases of the Nervous System. 3. Space-Occupying Lesions within the Skull: Tumour, Haematoma, Abscess. 4. Vascular Disorders of the Brain. 5. Epilepsy: Idiopathic and Symptomatic. 6. Migraine (Paroxysmal Headache). 7. Acute Infections of the Nervous System. 8. Syphilis of the Nervous System. 9. Disseminated Sclerosis (Multiple Sclerosis). 10. Paralysis Agitans (Parkinson's Disease). 11. Rheumatic Chorea (Sydenham's Chorea). 12. Injuries of the Brain: Concussion and Contusion. 13. Compression and Injuries of the Spinal Cord. 14. Subacute Combined Degeneration of the Spinal Cord. 15. The Heredo-Familial Ataxies: Friedreich's Disease. 16. Muscular Atrophies. 17. Myasthenia Gravis. 18. Multiple Peripheral Neuritis (Polyneuritis). 19. Lead Poisoning of the Nervous System. 20. Common Affections of the Cranial Nerves. 21. Sciatica. Brachial Neuritis. Protrusion of Intervertebral Disc. 22. Affections of the Spinal Nerves. 23. Some Common Nervous Affections of Infancy and Childhood. 24. Bromide Intoxication. 25. Some General Observations upon the Treatment of Nervous Diseases. 26. Torticollis and the Tics. 27. Occupational Cramps. 28. The Psychoneuroses. 29. A Simple Scheme of Examination of the Nervous System. Index.

There can be little doubt that Walshe's *Diseases of the Nervous System* has become a *sine qua non* for every student entering upon his clinical studies in medicine.

Now in its sixth edition, the volume has acquired additional girth, but it has not lost its outstanding quality as a sound and easily understood introduction to the complicated and intricate problems provided by diseases of the nervous system.

The value of the book, however, is by no means limited to the undergraduate student. It is an ideal account of the subject for the general practitioner.

It is not often that the problems of neurology are expressed in a prose style that is so attractive as Dr. Walshe's. In addition, the diagrams illustrating the neural pathways are of an exceptional degree of three-dimensional excellence. They are a worthy accompaniment to a most attractive introduction of this interesting field of medicine.

Readers will be interested to know that French and Spanish editions of this work were published during 1948—eloquent testimony to the widespread popularity of this important textbook.

LAW AND ETHICS OF DENTAL PRACTICE

The Law and Ethics of Dental Practice. By R. W. Durand, M.R.C.S., L.R.C.P., and D. Morgan, L.D.S. (Leeds). (Pp. 19 + vii. 7s. 6d.) London: Hodder and Stoughton Limited. 1950.

Contents: 1. The Dentists Acts. 2. The Ethics of Dental Practice. 3. Contracts. 4. Legal Obligations to the Patient. 5. The Dangerous Drugs and Pharmacy and Poisons Acts. 6. General Anaesthesia. 7. Precautions against the inhalation of Foreign Bodies. 8. Fractures. 9. Dentures. 10. Record Keeping. 11. Practice Management.

Although this little volume has been prepared primarily for the use of dental practitioners, the ethical problems involved touch also upon the field of interest of medical practitioners, who will read the account with considerable interest. The authors have had considerable experience as Secretary of the Medical Protection Society and Deputy Dental Secretary of the British Dental Association.

The volume includes much statutory information of importance to practitioners in the United Kingdom; the account of general anaesthesia and the inhalation of foreign bodies will interest members of both professions.

PROGRESS IN NEUROLOGY AND PSYCHIATRY

Progress in Neurology and Psychiatry, Vol. V. Edited by E. A. Spiegel, M.D. (Pp. 621 + xiv.) New York: Grune and Stratton. 1950.

Contents: 1. Basic Sciences. 2. Neurology. 3. Neurosurgery. 4. Psychiatry. Index.

In this admirable book various contributors review the recent advances made in the many branches of neurology and psychiatry during the past year. The work done has been extensive and of absorbing interest. In the review on shock treatment 293 papers are quoted, and in the course of a brief survey of the autonomic nervous system reference is made to 309 reports, an evidence of the almost overwhelming industry which took place in the space of a year.

A most valuable function fulfilled by each review is the provision of a comprehensive and informative index of noteworthy recent research. The main conclusions arrived at in each paper are summarized, and full references are given, so that the reader can have direct access to those reports which interest him.

The text demands a wide familiarity with existing neurological knowledge. It would have made the book more useful to general readers had the compilers described the recent advances with more reference to each subject as a whole. There are too many half-statements, such as: 'Complications of tridione therapy continue to be reported'; purpura, agranulocytosis and nephrosis are then mentioned, and the possibility is quite overlooked that the reader may be unaware of one of the complications previously reported.

Mention is made of the interesting report on 'an anencephalic monster, without even thalami', who reacted to noxious stimuli, loss of support, need of food and to fondling, and suggested to the authors that 'the function of the cerebral cortex is to provide a receptor and motor mechanism by which instinct and emotions are expanded'. Much attention has been devoted to the treatment of Parkinsonism, the drugs Parpanit and Artane having received thorough clinical trials; neither have the surgeons been inactive, Browder removing portions of the basal ganglia through an interventricular approach, and Gardner excising the superior cervical sympathetic ganglion.

Additional experiences with Streptomycin in tuberculous

meningitis are reported. Levinson concludes that it cannot yet be said that the drug produces complete recovery from the disease. Recent work strengthens the impression that the prognosis is worse in those cases which have already had disturbance of consciousness when treatment is started.

Penicillin holds its place as the most effective weapon in the treatment of neurosyphilis; the controversy continues whether malarial therapy is necessary as well. The humble paraldehyde receives fresh prominence, being claimed as the most useful method for interrupting status epilepticus.

CORRESPONDENCE

SPECIALISTS OR CONSULTANTS?

To the Editor: As a young specialist in a very confined speciality I am perturbed at the threat to my livelihood, namely the idea of the formation of a Consultant Register and the elimination of the Specialist Register.

I have spent five years in all at my speciality, including three years overseas, and this after a lengthy spell in the army. During my comparatively short term in private practice I have found that over 90% of my patients come to me direct, through the recommendations of patients. The number referred by general practitioners is negligible. This is the experience of the vast majority of the younger school of specialists.

There have also been attempts on many occasions to divert patients to others—probably golfing or cocktailing confréres—and many patients have been successfully diverted.

The general practitioner is allowed to do domiciliary practice, he may inoculate, vaccinate and operate; X-rays and blood tests are in his scope and even hypnosis and psychotherapy is permitted, but he begrudges the young specialist confined to a speciality the privilege of seeing a patient who may choose to see him. What tolerance! How many of the senior specialists would survive the test if confined to purely consultant work. Why must there be an intermediary between the patient and specialist? To protect the public?—Poppycock!

The public is competent enough to judge where to get the best services and not the general practitioner, for obvious reasons.

Should this proposed iniquitous move come to fruition, I, for one, would take my name off the Register and resign forthwith from the Medical Association. It is high time the specialist group formed its own group within the Association *à la* the general practitioner group to protect the interests of its members, who after all are not in direct competition with the general practitioners, seeing that their fees are five to six times more than those of the general practitioners. Where is the competition even if a specialist occasionally does give the patient an injection, or vaccinates a child or does a normal confinement? The disparity in fees is enough to eliminate the term competition and the patient is only prepared to pay this big difference in fee if he feels that his condition warrants specialist attention—and why should he not be given the choice? Surely this is the essence of democracy!

The man who pays the piper should call the tune!

Specialist (ex G.P.).

22 January 1951.

MEDICAL FILMS: A CATALOGUE

To the Editor: A revised *Catalogue of Medical Films* available in South Africa is now being prepared. This is intended as a guide for anyone wishing to illustrate lectures by means of films, for research workers and for medical photographers who may, unwittingly, be duplicating films which already exist and adequately cover the particular subject.

I would appreciate the co-operation of your readers in letting me have details of any medical films in their possession, or known to them. This information should include a short summary of the film content, details of length, etc., whether in colour, suitability for various audiences, and conditions of loan; or whether the film is privately owned and not available on loan. It is emphasized that inclusion of a title in the list will not necessarily mean that the film is to be made available generally, and it is desirable to include in the list even those films where the original reversal-print only exists.

Without co-operation this catalogue will be incomplete and quite inadequate, and an urgent appeal is made to your readers to let me have any relevant information as soon as possible.

S. M. Lewis.

1 Louie Court,
Alexander Road,
Muizenberg.
29 January 1951.

PHARYNGO-OESOPHAGEAL PERFORATION

To the Editor: I have read with great interest Mr. Lance Knox's excellent article, *Pharyngo-Oesophageal Perforation*. I should like to add a short note about the diagnosis of the site of perforation, both before and after operation. It is not always easy to tell clinically where the emphysema of the neck is derived from, and pain is a very uncertain localizer. In two of my cases a barium swallow was given, with moderately thick barium; in both the barium passed through the perforation and produced a smudge on the back of the oesophagus, about one inch below the cricoid. In a third case the perforation was found about two inches lower, within the thorax.

I think Mr. Knox will agree that at operation a small perforation is not always easy to find, as the muscular layer may close over the hole. The barium, previously given, is very obvious and leads one straight to the hole in the oesophagus, which is usually small.

I agree entirely with the other points that Mr. Knox brings up; the above manoeuvre was used in two cases mentioned in Dr. Avery Jones's article.

L. Fatti, F.R.C.S.

Johannesburg Hospital,
Johannesburg.
29 January 1951.

ACTH AND CORTISONE

To the Editor: The rapid development of hormone therapy has been one of the outstanding features of the past decade, and the number of papers published on the subject is, to say the least, phenomenal. In these circumstances, it is understandable that some confusion may have arisen in certain directions, notably in the differentiation of tropins (trophins) and hormones.

Steroid hormones, for the most part, comprise a definite group of compounds of known formula, the molecule has in most cases a common denominator, cyclopentanoperhydrophenanthrene, frequently referred to as the phenanthrene nucleus. One of the chief reasons for the considerable reductions in price of this group is that the synthesis has been improved and the production consequently cheapened.

Tropins (or trophins), on the other hand, are still prepared exclusively from animal glands, sera or urine, and synthesis is not possible since the formulae are unknown. The most recent example of the trophins is of course ACTH (adrenocorticotrophic hormone), and the newest additions to the steroid hormone group are the cortisones, of which more than 20 are known to exist. Cortisones are of the N-hydroxy-N-corticosteroid type, where N is the variable; and many, if not all, appear to be analogous with naturally secreted cortical hormones. ACTH, on the other hand, is a natural secretion of the pituitary which stimulates the adrenal cortex to produce its steroids, as in a normally functioning body.

Recent research appears to indicate that to produce the desired stimulation, far smaller doses of the trophins are needed than was at first supposed. This is probably due to purification of the individual substance (probably a protein) to a degree hitherto impossible; hence the potency is enhanced considerably.

Endocrine.

Cape Town.
31 January 1951.

The Medical Association of South Africa
Die Mediese Vereniging van Suid-Afrika

AGENCY DEPARTMENT : AGENTSKAP AFDELING

CAPE TOWN : KAAPSTAD

Medical House, P.O. Box 643, Cape Town. Telephone 2-6177
Mediese Huis, Posbus 643, Kaapstad. Telefoon 2-6177

PRAKTYKE TE KOOP : PRACTICES FOR SALE

(608) Natal. Dispensing practice with two appointments. Attractive free house with one appointment, and free electricity, water, fuel and allowance for one servant. Takings approx. £1,000 p.a. Premium required for goodwill, drugs and surgery furniture, £800.

(631) Natal South Coast. Very modern recently built house on one acre and nucleus of practice with average income of £50 per month since practice established 18 months ago. No premium required for goodwill. House for sale at £6,600 or to let at £30-£35 per month.

(582) Unopposed. Eastern Province dispensing practice. M.O.H. appointment. £75 per year. Premium required £100.

(592) Nucleus Cape Town Northern Suburban practice. Adjoining flat and surgery to let, providing excellent accommodation. Premium £400.

(365) North-west Cape. Two appointments held. Gross income 1949 £1,648. Premium £550. House and surgery at low rentals. Nursing home being built. Afrikaans community.

(529) Eastern Province hospital town. D.S. Premium £1,500 includes fully-equipped surgery. Terms if necessary.

SPREEKKAMERS : CONSULTING ROOMS

(621) Southern Cape Town suburb. Surgery and two waiting rooms etc. Rental £15 p.m. Excellent and select locality.

PRAKTYKE VERLANG : PRACTICES REQUIRED

(460) Thoroughly bilingual young doctor interested in assistantship with view to partnership or option to purchase partnership in practice with surgical scope.

* * * *

JOHANNESBURG

Medical House, 5 Esselen Street. Telephones 44-9134-5
Mediese Huis, Esselenstraat 5. Telefone 44-9134-5

PRAKTYKE TE KOOP : PRACTICES FOR SALE

(Pr S19) Vrystaat plattelandse praktyk. Totale jaarlikse bruto-ontvangste £2,700. Premie £750.

(Pr S14) Transvaal country practice. Income approx. £1,000 p.a. Transferable appointment held. Premium £500.

(Pr S16) Transvaal hospital town. Income £2,300. No surgery done. Practice is for sale with large house at £5,000.

(Pr S20) Transvaal prescribing and dispensing practice. Gross income 1950, £4,000. D.S. and M.O.H. appointments held. House for sale at £3,000 or to let at £17 10s. p.m. Premium £2,000. This includes drugs, surgery furniture and instruments.

(Pr S21) Practice in progressive Eastern Transvaal town. Gross income 1950, £2,100. Drugs, surgery furniture and instruments included in premium. What offers?

PRAKTYKE BENODIG : PRACTICES REQUIRED

(Pr W20) Partnership wanted in Johannesburg general practice by young doctor experienced in Paediatrics (D.C.H.).

ASSISTENT VERLANG : ASSISTANT REQUIRED

(A O17) Assistant required for practice in S. Rhodesian mining and ranching district. Terms £2 2s. p.d. Own car advantage but not essential. Main interest should be surgery. Good prospects for later partnership or independent practice.

Praktyk te Koop

Goed toegeruste privaat algemene praktyk met eie bereiding van medisyne. Bruto inkomste oor £2.000 per jaar (hiervan ongeveer £65 per maand van naturelle). Geen chirurgie. Geen aanstellings. Goeie kans vir uitbreiding. Naaste hospitaal 25 myl ver. Premium £1,000—£600 kontant, res afbetaalbaar oor 12 maande. Huurhuis beskikbaar. Skryf aan 'A. E. W.', Posbus 643, Kaapstad.

Pretoria Municipal Employees' Sick Fund

VACANCIES FOR TEMPORARY PART-TIME SPECIALISTS

Applications are invited from specialists resident in Pretoria, for the following part-time posts:—

1. Paediatrician at a remuneration of £240 per year.
2. Orthopaedic Surgeon at a remuneration of £240 per year.

The Posts are advertised in terms of an agreement with the Northern Transvaal Branch of the Medical Association and applicants must be members of the Association.

Applicants should reach the undersigned by Monday, 26 February 1951.

R. de Vries
Secretary

P.O. Box 408
Pretoria
5 February 1951

Radiologist: Cape Town

For sale: A half-share in an old-established Cape Town radiological practice. Average net income over the past three years for the half-share amounts to £3,300. X-ray equipment, radium, furniture and accessories valued at the ridiculously low figure of £700 half-share, for quick sale. Purchase price for half-share £4,000 cash, or terms £2,000 cash and £75 per month, plus 5% interest on the unpaid balance. First genuine offer will be accepted. Write to 'T. F'. P.O. Box 643, Cape Town.

Practice for Sale

Well-established Physician's practice for sale. Well-equipped and designed consulting rooms in centre of Pretoria, reasonable rental, premium merely nominal in deceased Estate. Reference books and medical equipment, including Electro Cardiograph and B.M.R. apparatus and furniture can also be taken over and if required also large dwelling-house in Arcadia. Apply: W. F. van der Merwe & Co., P.O. Box 499, Pretoria. Attorneys for Executor Dative.

Vacant District Surgeoncies

Applications are invited for the following part-time district surgeoncies.

Place	Salary per annum	Drug Allowance per annum
CAPE PROVINCE	£	£
Niekerkshoop (Hay)	400	20
Darling (Malmesbury)	150	15
Merweville (Beaufort West) ..	300	25
George	300	30
Touws River	150	15
TRANSVAAL		
Alldays (Zoutpansberg) ..	200	20
Villa Nora (Potgietersrust) ..	350	25
ORANGE FREE STATE ..		
Vrede	440	90
Ficksburg	365	80
NATAL		
Estcourt	400	25
Weenen	400	40

The salaries cover all routine services; tariff fees for travelling, operations and certain other services are payable in addition.

The appointments are on part-time basis and private practice is not precluded.

For further information see Advertisement in *Government Gazette* or apply to the Secretary for Health, P.O. Box 386, Pretoria, to whom applications, which should reach him before 7 March 1951, should be addressed.

N.B. Testimonials (copies) may be submitted but the Minister of Health wishes it to be known that any candidate will be regarded as disqualified who directly or indirectly canvasses for appointment. (27230)

Provincial Administration of the Cape of Good Hope

(HOSPITAL DEPARTMENT)
HONORARY APPOINTMENTS

Applications are invited from registered medical practitioners for the following posts at the Victoria Hospital, Wynberg:—

1. *Honorary Visiting Dentist.*
2. *Senior Honorary Visiting Surgeon.* Applicants for this post should state whether in the event of the position being filled by one of the Surgeons at present on the Honorary Staff they would be prepared to accept the position of Assistant Honorary Visiting Surgeon or Surgical Registrar.

Applications are also invited from registered medical practitioners for the undermentioned post at the Groote Schuur Hospital.

1. *Honorary Gynaecological Registrar.*

The appointments will be for five years, but may be terminable before the end of that period if and when the medical staffing of the Hospitals is reorganized.

Applications containing particulars of age, qualifications, experience, etc., with copies of recent testimonials should be forwarded to the undersigned by noon on 3 March 1951.

V. Johnson
Acting Branch Representative
(4731)

Universiteit van Pretoria

SENIOR LEKTOR IN ANATOMIE

Aansoeke word ingewag vir die pos van voltydse senior lektor in Anatomie op die salarisskaal £780×40—£940, plus 'n lewenskostetoelae van ongeveer £200 per jaar aan getroudes en £80 per jaar aan ongetroudes. 'n Hoër aanvangsalaris sal oorweeg word op grond van kwalifikasies en ervaring. Aan die suksesvolle applikant(e) sal die reg van 'n beperkte privaat praktyk waarskynlik verleen word.

Aansoeke van medici vergesel van volledige besonderhede i.v.m. akademiese kwalifikasies, ervaring, ouderdom, ens., moet die ondergetekende bereik op of voor Vrydag, 23 Februarie 1951.

J. C. V. Breytenbach
Registrateur
(G 28187)

Transvaal Provincial Administration

VACANCIES: TRANSVAAL PUBLIC HOSPITALS

Applications are invited from suitable qualified candidates for the undermentioned posts at Public Hospitals in the Transvaal.

Applications should be addressed to the Superintendent or Secretary of the Hospital and should contain full particulars as to the age, professional, academic and language qualifications, experience and conjugal status of the applicant and should further indicate the earliest date upon which duties can be assumed. Copies only, of recent testimonials to be attached.

Hospital	Vacant Post	Emoluments	Remarks
Johannesburg:	Part-time Chiropodist (1)	£100 per annum	Qualified chiropodist, 2 half sessions of 2 hours each per week
Klerksdorp:	Junior Assistant Radiologist	£1,200 x 50 —1,500	Married plus (*a*) below. Single plus (*b*) below. Plus £150 per annum disability allowance. To serve Potchefstroom and Wolmaransstad hospitals as well.
Pretoria:	Part-time Lecturer in Paediatrics (1)	£684 per annum	3 sessions per week at £228 per session

(*a*) £208 per annum cost-of-living allowance.
(*b*) £50 per annum cost-of-living allowance.

In addition to salary, the successful applicants for full-time posts will receive leave privileges and rail concessions.

Closing date of applications: 26 February 1951.

Application forms are obtainable from the Provincial Secretary, Hospital Services Department, P.O. Box 383, Pretoria. (27180)

Village Management Board of Touws River

VACANCY FOR HONORARY MEDICAL OFFICER OF HEALTH

Applications are invited from qualified medical practitioners, and will be received up to 15 March 1951, for the post of Honorary Medical Officer of Health to the Village Management Board of Touws River.

An honorarium of £60 per annum is paid by the Board for such services.

H. V. Whitman
Secretary
Village Management Board of Touws River
C/o Railway Health Officer (8)
Railway Headquarters
Johannesburg

Dorpbestuur, Touwsrivier

VAKATURE VIR ERE-MEDIESEGESONDHEIDSBEAMPTE

Aansoeke deur gekwalifiseerde mediesegeneeskundiges vir die pos van Ere-Mediesegensondheidsbeampte van die Dorpbestuur van Touwsrivier word gevra en sal tot 15 Maart 1951 ingewag word.

'n Honorarium van £60 per jaar word deur die Bestuur vir sodanige dienste betaal.

H. V. Whitman
Sekretaris
Dorpbestuur van Touwsrivier
p/a Spoorweggesondheidsamptenaar (8)
Spoorweg Hoofkantoor
Johannesburg

Radiological Partnership

Radiological partnership in old-established firm in large rapidly expanding coastal city in South Africa, with ideal climate. Share yielding over £3,200 net per annum. Practice figures increasing yearly; two remaining partners.

The practice does all the radiological work for a hospital of over 400 beds. Rooms and apparatus of the most modern type. Write to 'A. F. C.', P.O. Box 643, Cape Town.

Siekefonds van die Suid-Afrikaanse Spoorweë en Hawens

AANSTELLING VAN SPOORWEGDOKTER: KERELAW: AANGRESENDE BLOEMFONTEIN

Applikasies word van geregistreerde mediese praktisyns ingewag vir die betrekking van Spoorwegdokter, Kerelaw, en vir die spoorwegtrajek vanaf Rhenosterspruitbrug (uitsluitend) tot Sannaspos (uitsluitend) teen 'n salaris van £641 per jaar plus vervoertoelae van £100 per jaar, plus die gelde en toelaes wat in die Regulasies van die Siekefonds voorgeskryf word, en met die reg om privaat te praktiseer.

Die salaris is onderhewig aan wysiging in ooreenstemming met die sensus van lede wat op 1 April van elke jaar afgeneem moet word.

Die aanstelling geskied kragtens die regulasies van die Siekefonds en opsegging van dienste is onderworpe aan vier maande kennisgewing deur een van beide partye.

Dit word verlang dat die suksesvolle applikant op Kerelaw sal woon, maar aan hierdie vereiste sal nie op aangedring word nie. Dit word egter vereis dat hy sy eie spreekkamers en telefoonfasiliteite te Kerelaw voorsien.

Die suksesvolle applikant sal dienste aanvaar op 'n datum wat gereël sal word en sy pligte moet ooreenkomstig die regulasies van die Siekefonds uitgevoer word.

Aansoeke moet die Distriksekretaris, Distriksiekefondsraad, Charlestraat 2, Bloemfontein, nie later as 31 Maart 1951 bereik nie en applikante moet die volgende vermeld:—

1. Volle naam.
2. Kwalifikasies (waar en wanneer verkry en opgedoen).
3. Ondervinding (waar en wanneer verkry en opgedoen).
4. Datum van geboorte.
5. Land van geboorte.
6. Getroud of ongetroud.
7. Of ten volle tweetalig.
8. Of Suid-Afrikaans burger.
9. Watter staatsbetrekking, indien enige, beklee word.

Verwing deur en ten behoewe van enige applikant stel so 'n applikant bloot aan diskwalifikasie.

Enige verdere besonderhede wat verlang word, kan op aanvraag van die Distriksekretaris by bovermelde adres verkry word.

P. J. Klem
Hoofsekretaris

Johannesburg
17 Februarie 1951 (65)

Town Council of Springs

VACANCY: MEDICAL OFFICER: REGISTRATION (MALE)

Applications are invited from fully qualified bilingual male medical practitioners for the above position in the Public Health Department on the salary grade £990 × £60—£1,110 per annum plus variable cost-of-living allowance and car allowance.

The main duties attaching to this post are the examination of Natives for Registration of Service Contracts framed under the Native (Urban Areas) Act, clinic services, and such other duties as the Council may direct from time to time.

Applications stating age, educational and other qualifications, experience, whether married, military service (if any) and period of residence in Springs (if any), and accompanied by copies of two recent testimonials will be received by the undersigned up to 12 noon on Wednesday, 28 February 1951.

The successful applicant will be required to pass a medical examination by the Council's Medical Officer of Health prior to assumption of duties, and to join the Municipal Employees Association and the Pension Fund. Preference will be given to applicants who have rendered military service.

In terms of the Council's standing orders personal canvassing for appointments in the gift of the Council is strictly prohibited and proof thereof will disqualify the candidate for appointment.

C. L. Coles
Town Clerk

Town Hall
Springs
30 January 1951 (No. 13)

National Hospital, Bloemfontein

VACANCY : RADIOLOGIST

Applications are invited from duly qualified Radiologists for the post of fulltime Radiologist at the National and Tempe Provincial Hospitals, Bloemfontein.

Salary scale £1,750 × 50—£1,900 p.a. plus cost-of-living allowance of £208 p.a. for married and £50 p.a. for single persons.

Applicants must be able to assume duty as soon as possible.

It will be expected that the successful applicant will be acceptable for registration as a specialist within twelve (12) months of the date of commencement of his duties.

The post is pensionable and the appointment will be made in accordance with the O.F.S. Hospital Ordinance No. 13 of 1933 as amended.

Applications stating age, qualifications, marital status and experience, must be accompanied by certified copies of certificates and testimonials and must reach the undersigned on or before 9 March 1951.

J. W. Wessels
Medical Superintendent
(Y825138)

Nasionale Hospitaal, Bloemfontein

VAKATURE : RADIOLOOG

Aansoeke word ingewag van daartoe behoorlik gekwalifiseerde Radioloog om die betrekking van voltydse Radioloog aan die Nasionale Hospitaal, Bloemfontein, en die Provinsiale Hospitaal, Tempe.

Salarisskaal £1,750 × 50—£1,900 per jaar plus heersende duurtetoeslag van £208 jer jaar vir getroude en £50 per jaar vir ongetroude persone.

Kandidate moet so spoedig moontlik dienste kan aanvaar.

Die suksesvolle kandidaat moet gekwalifiseerd wees om binne een jaar na datum van diens-aanvaarding te registreer as Radioloog-spesialis.

Die betrekking is pensioendraend, en die aanstelling word gemaak ooreenkomstig die O.V.S. Hospitaal Ordonansie No. 13 van 1933 soos gewysig.

Aansoeke met vermelding van ouderdom, kwalifikasies, huweliksstaat en ondervinding, moet vergesel gaan van gesertifiseerde afskrifte van sertifikate en getuigskrifte en moet die ondergetekende op of voor 9 Maart 1951 bereik.

J. W. Wessels
Geneesheer Direkteur
(Y825138)

Motor Industry Sick Benefit Fund

(TRANSVAAL AND ORANGE FREE STATE)

PART-TIME MEDICAL OFFICER FOR HEIDELBERG]

Applications are invited from fully qualified registered general practitioners in respect of the abovementioned appointment.

The Fund operates on the closed panel system and the successful candidate will be required to provide consulting room, domiciliary and hospital service (when necessary) for members and their dependants. Further details will be furnished on request.

Applications must reach the Secretary of the Fund, P.O. Box 8477, Johannesburg, by Friday, 9 March 1951.

1 February 1951

Practice for Sale

Well-established European Durban general practice. Midwifery plays quite a big part. Rooms in centre of city. Income for 1950: £2,710. Premium required: £1,500. Owner leaving for overseas. Write urgently to 'A. F. B.', P.O. Box 643, Cape Town.

Locum Wanted

At Tsumeb Mine Hospital, for the period 24 March to 27 April 1951. Remuneration three guineas per day all found. The return air fare to Windhoek and air or bus fare from Windhoek will be refunded. Apply Senior Medical Officer, Tsumeb Hospital, Tsumeb, South West Africa.

Printed by Cape Times Ltd., Parow, and Published by the Proprietors, THE MEDICAL ASSOCIATION OF SOUTH AFRICA, MEDICAL HOUSE, 35 Wale Street, Cape Town. P.O. Box 643. Telephone 2-6177. Telegrams: 'Medical'

The concept that allergic tissue responses are important contributory factors in upper respiratory infections has been widely accepted. To combat these allergic manifestations more effectively, the time-tested, dependable decongestant—Neo-Synephrine hydrochloride—has been combined with a new, highly active antihistaminic—Thenfadil hydrochloride.

Neo-Synephrine® Thenfadil

HIGHLY EFFECTIVE DECONGESTANT ANTIHISTAMINIC

For symptomatic control of the common cold, allergic rhinitis including hay fever, vasomotor rhinitis and sinusitis.

Well Tolerated—No Drowsiness—Neo-Synephrine Thenfadil nasal solution in clinical tests was well tolerated except for a transitory stinging in a few cases. There was essential freedom from central nervous system stimulation: trepidation, restlessness, insomnia; neither was there drowsiness.

Effective—In common colds, allergic rhinitis including hay fever, vasomotor rhinitis, and sinusitis, excellent results were reported in nearly all cases. There was prompt, prolonged decongestion without compensatory vasodilatation. Repeated doses did not reduce the consistent effectiveness.

Dose: 2 or 3 drops up to ½ dropperful three or four times daily. Neo-Synephrine Thenfadil solution contains 0.25 per cent. Neo-Synephrine hydrochloride and 0.1 per cent. Thenfadil hydrochloride (N, N-dimethyl-N'-(3-chenyl)-N'-(2-pyridyl) ethylenediamine hydrochloride) in an isotonic buffered aqueous vehicle. Supplied in bottles of 30 cc. (1 fl. oz.) with dropper.

Winthrop Products (Pty.) Ltd.

P.O. Box 889 DURBAN | P.O. Box 2865 JOHANNESBURG | P.O. Box 2204 CAPE TOWN

Neo-Synephrine, trademark registered brand of phenylephrine
Thenfadil, trademark.

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